New Hampshire Silver Jackets:
Spring Report of State Hydrology and Watershed Conditions
2020

Current as of
February 21, 2020

Will be revised as conditions change

NEW HAMPSHIRE SILVER JACKETS

A team of federal and state agencies that focus on New Hampshire's flood risk management priorities and provide technical expertise and resources in the development of solutions and projects.

https://silverjackets.nfrmp.us/State-Teams/New-Hampshire.cfm

New Hampshire Silver Jackets: Annual Spring Report of State Hydrology and Watershed Conditions 2020

- New Hampshire Silver Jackets has jointly compiled this information on status of New Hampshire Hydrology, Watershed, Lake and River conditions in preparation for spring snowmelt and runoff season of 2020.

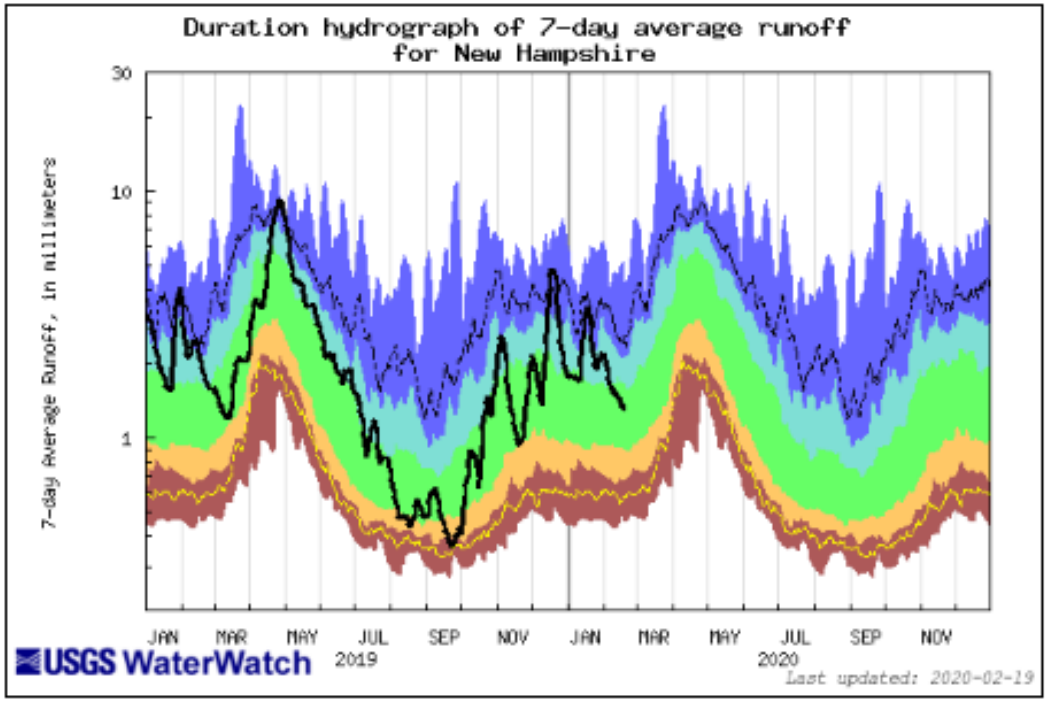
- Individual agency team members have reviewed snowpack, existing river ice conditions, streamflow, long-range weather and flood outlooks, and lake water levels.

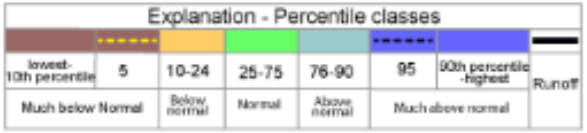
- Every spring, flood risks can be increased when rain is accompanied by snowmelt. Such a situation can be made worse if rivers remain ice covered when such events occur.

- It is important to note, however, that flooding does not always occur from snowmelt alone, and are often driven by a precipitation event.

Spring 2020 Conditions and Flood Hazard Assessment
Streamflows

7-DAY AVERAGE RUNOFF FOR NEW HAMPSHIRE



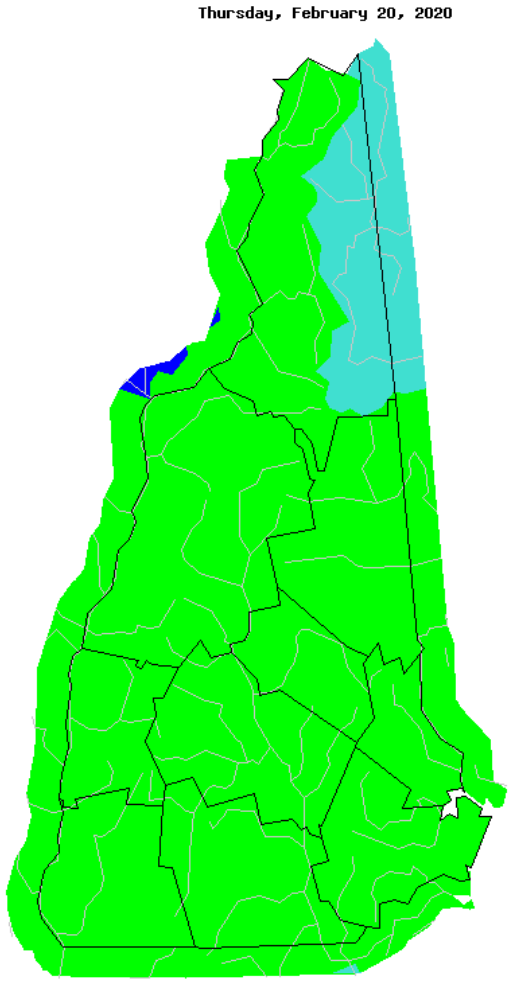


- 7-Day average runoff was above to much-above normal for most of winter, mainly due to rain events in December and January.
- Currently trending into normal range.
- Similar to 2019

More information: https://waterwatch.usgs.gov/index.php?id=ww

Spring 2020 Conditions and Flood Hazard Assessment
Streamflows

CURRENT STREAMFLOW CONDITIONS FOR NEW HAMPSHIRE



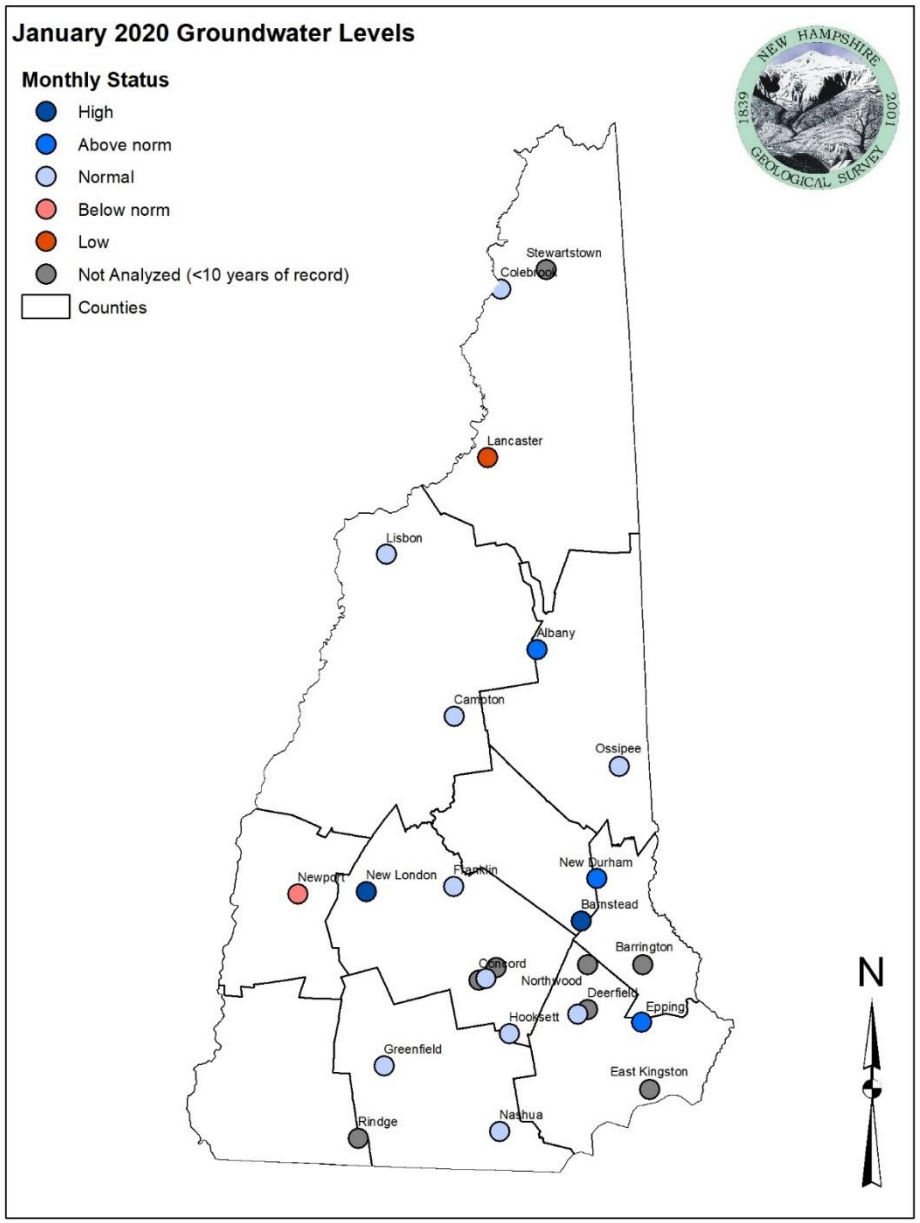
- Current (Feb 18) streamflow conditions are generally normal.
- Androscoggin River Basin is above normal (regulated by upstream storage dams).
- USGS streamflow data may be accessed at:

https://waterdata.usgs.gov/nh/nwis/current/?type=flow

Explanation - Percentile classes							
Low	<10	10-24	25-75	76-90	>90	High	No Data
	Much below normal	Below normal	Normal	Above normal	Much above normal		

USGS

Spring 2020 Conditions and Flood Hazard Assessment
Groundwater Levels



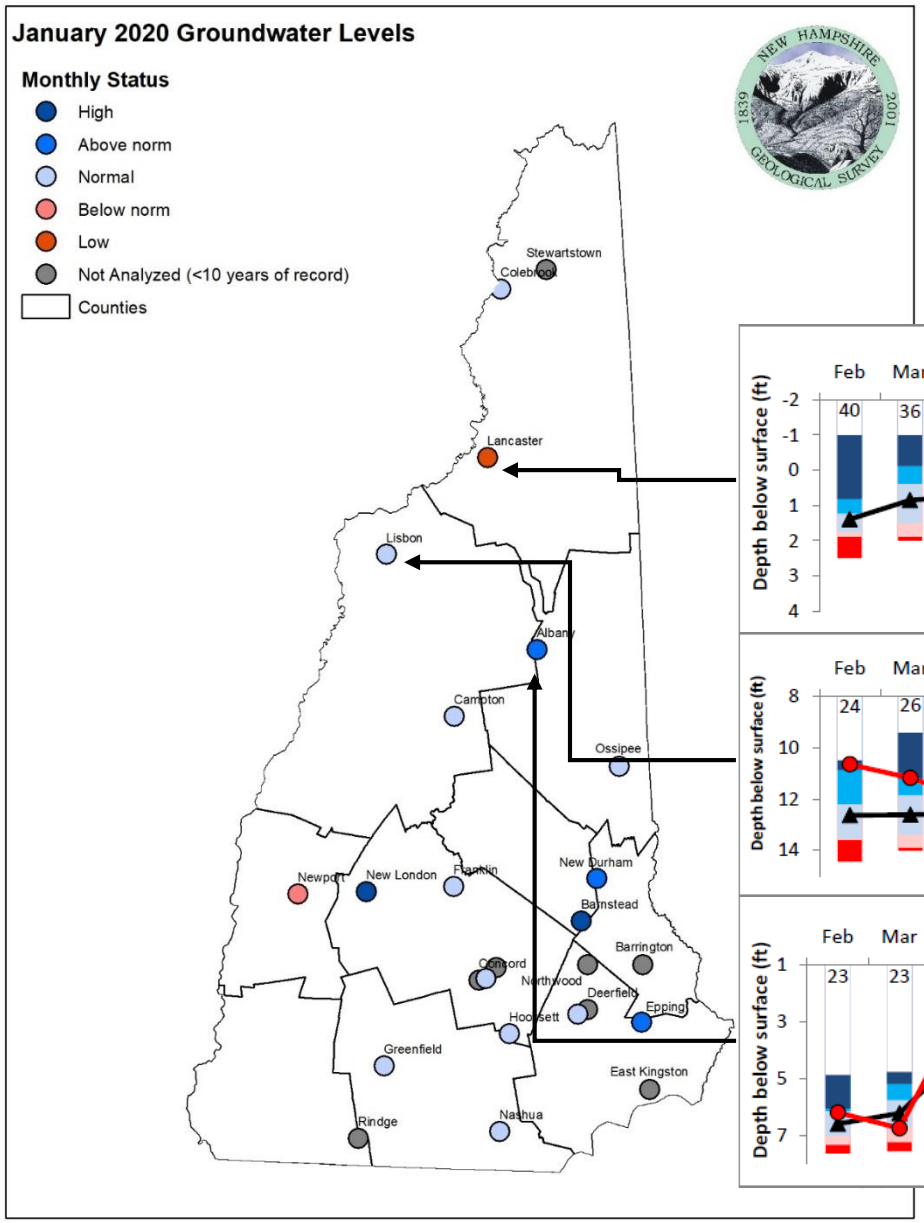
Summary

- NHGS monitors 31 groundwater wells monthly, and 20 wells hourly
- January 2020: Most well water levels are normal to above normal across the state
- Groundwater wells in WMNF, Merrimack Valley, and Seacoast are normal to above normal
- Connecticut River Valley is normal (with negative departure) to low
- Wells in **Lancaster** and **Newport** have been consistently below normal or low since Spring 2019
- The well in **Hooksett** had been below normal to low from March to November, 2019
- Levels were slightly higher in January 2019 compared to January 2020

Links to Groundwater Level reports on NHGS' site:
https://www.des.nh.gov/organization/commissioner/pip/publications/geologic/groundwater-levels.htm

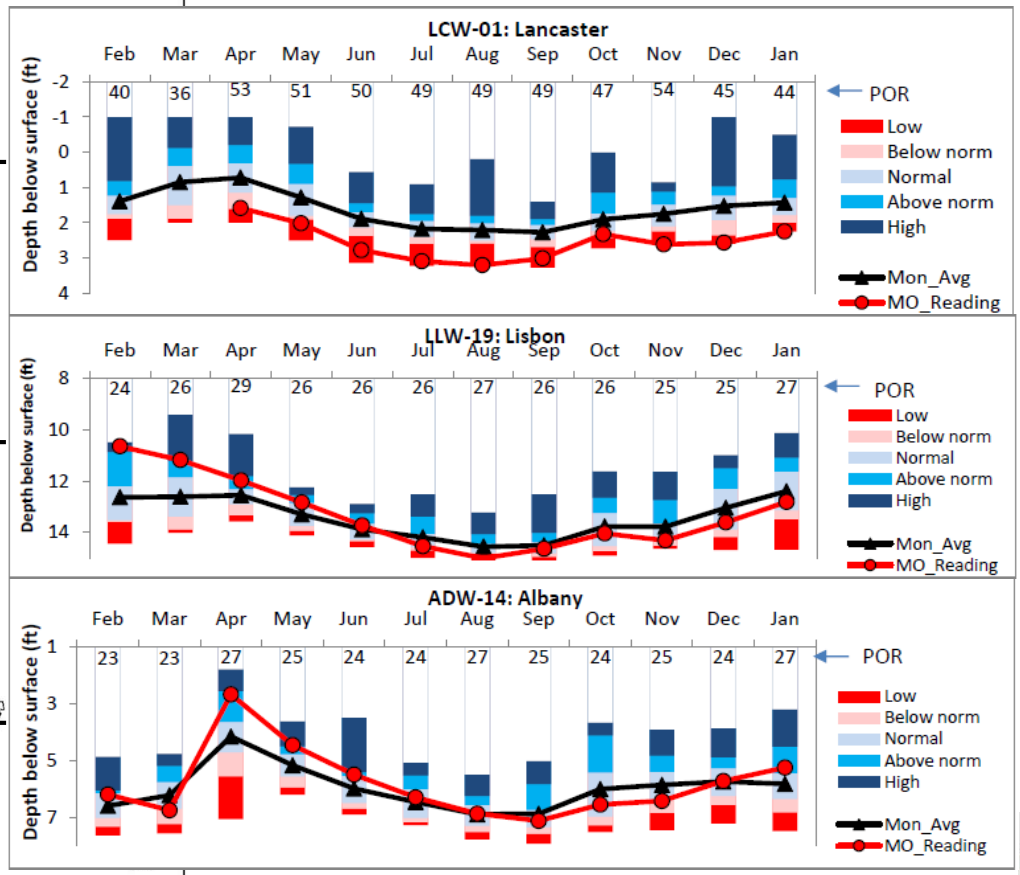
Spring 2020 Conditions and Flood Hazard Assessment
Groundwater Levels

NORTHERN WELLS



- Most well water levels are normal with some negative departure
- **Albany**: Above normal
- **Lancaster**: Low since April

Departure from Ave. in feet



-0.82

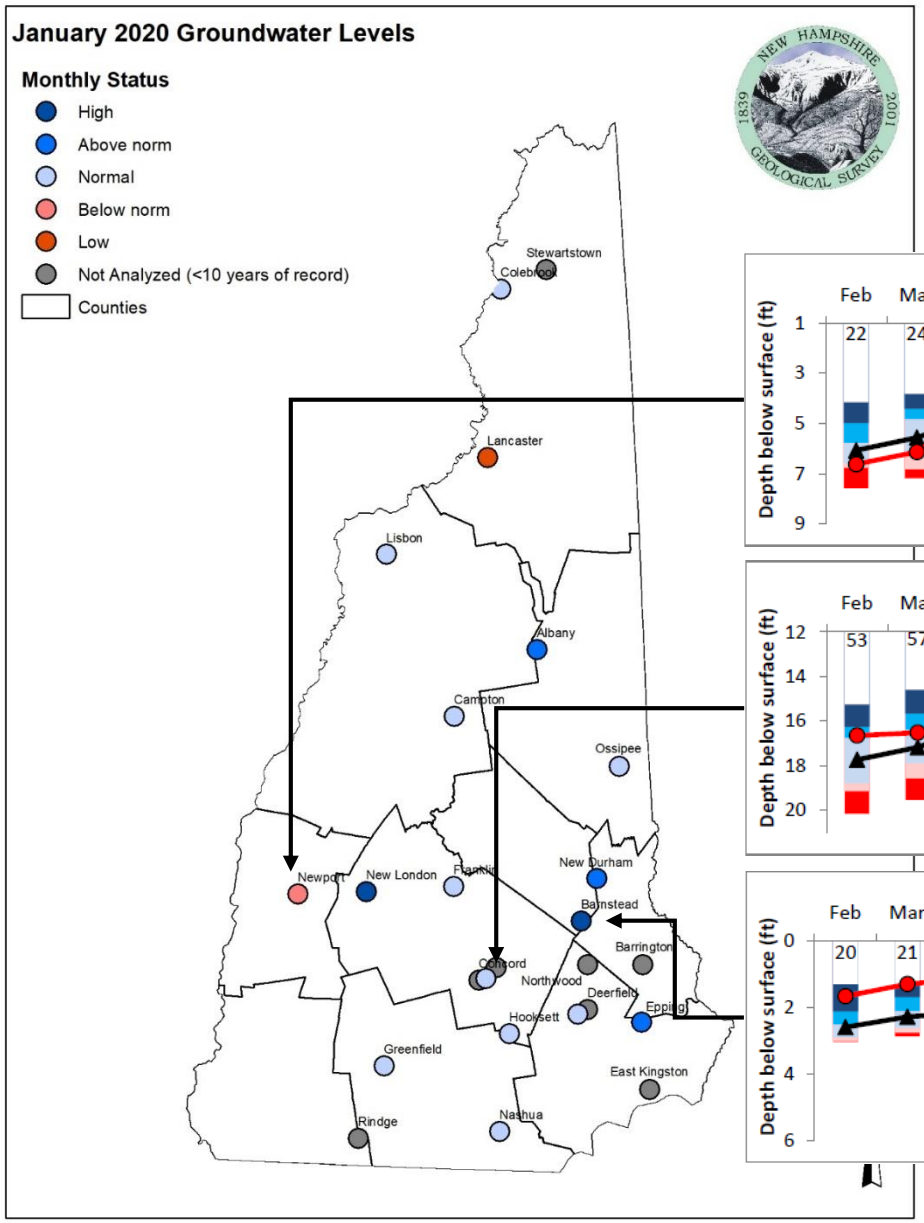
-0.42

0.57

*POR = Period of record

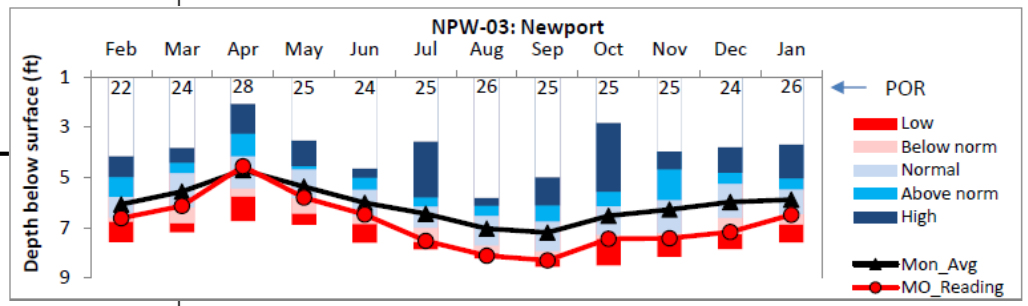
Spring 2020 Conditions and Flood Hazard Assessment
Groundwater Levels

CENTRAL WELLS

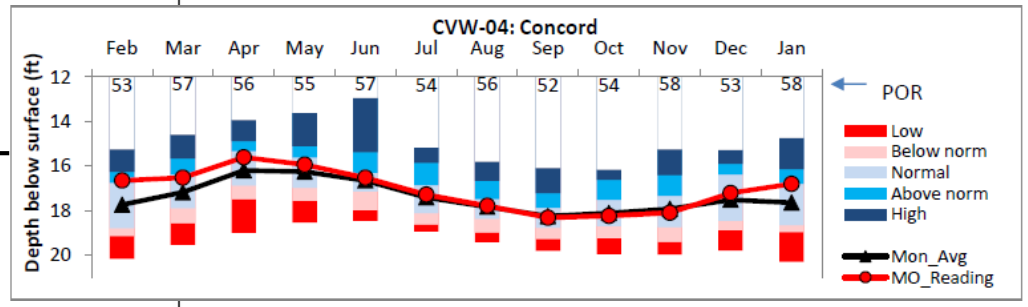


- Most water levels are normal to high
- The water level in the **Newport** well has been below normal to low since May

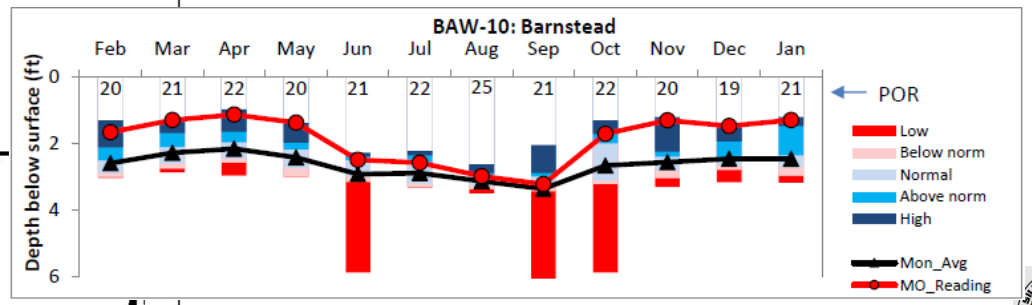
Departure from Ave. in feet



-0.60



0.84

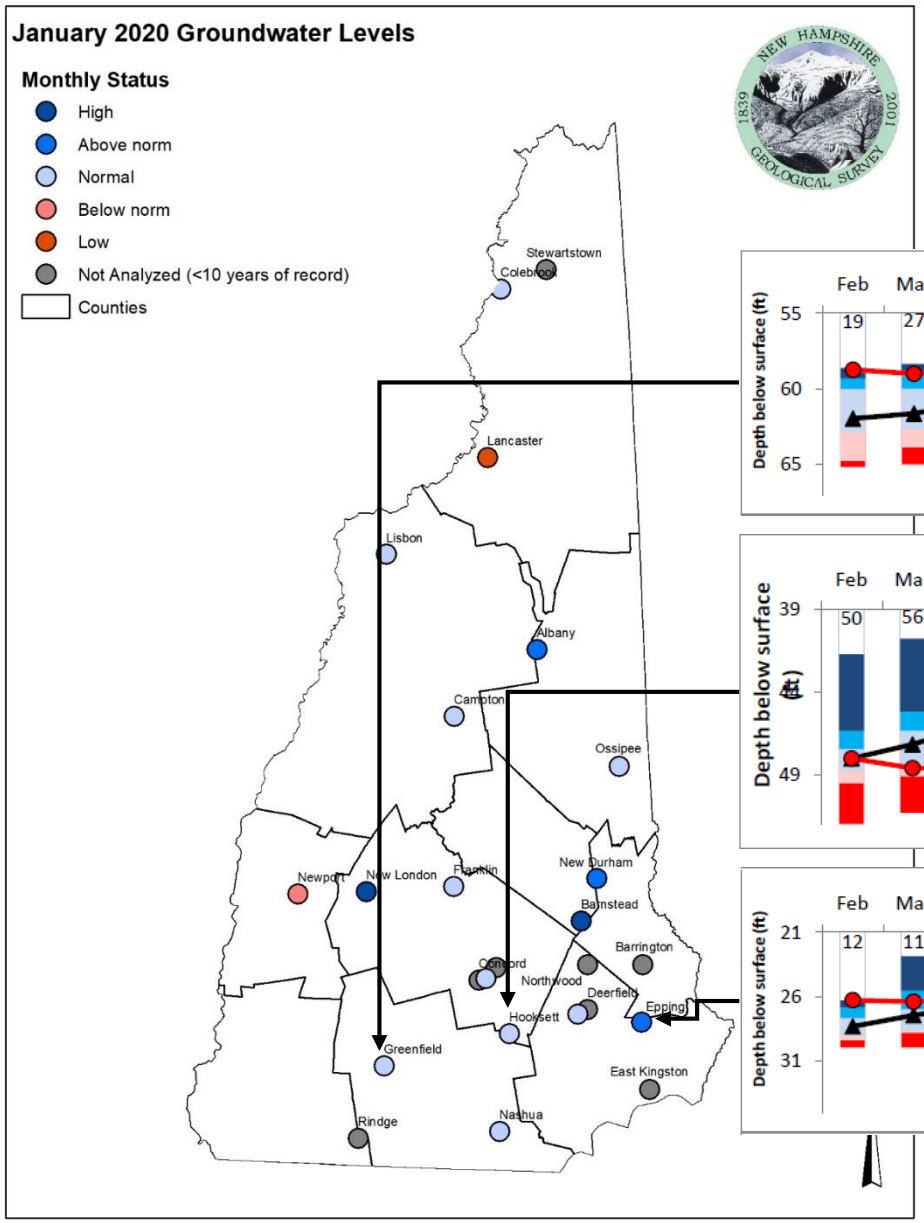


1.16

*POR = Period of record

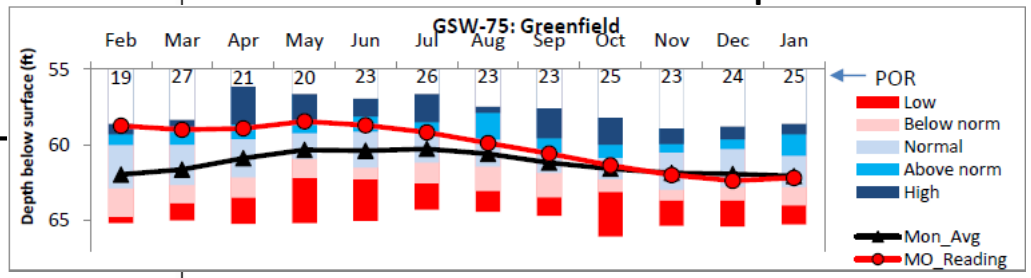
Spring 2020 Conditions and Flood Hazard Assessment
Groundwater Levels

SOUTHERN WELLS

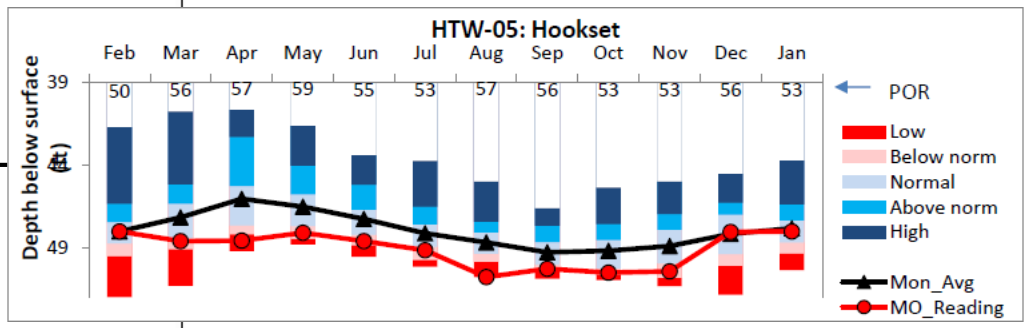


- Water levels are normal to above normal
- The well in **Hooksett** had been below normal to low from March to November

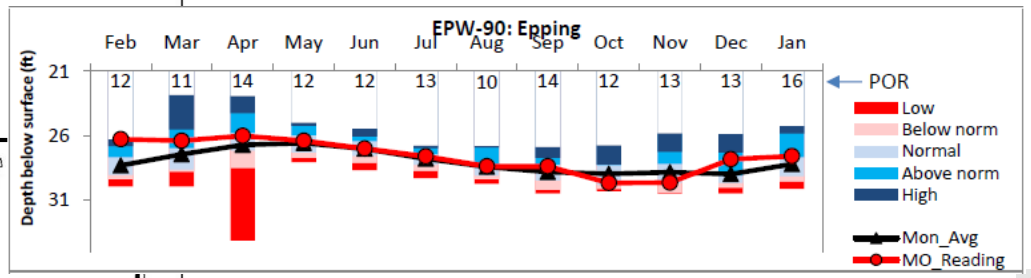
Departure from Ave. in feet



-0.13



-0.18

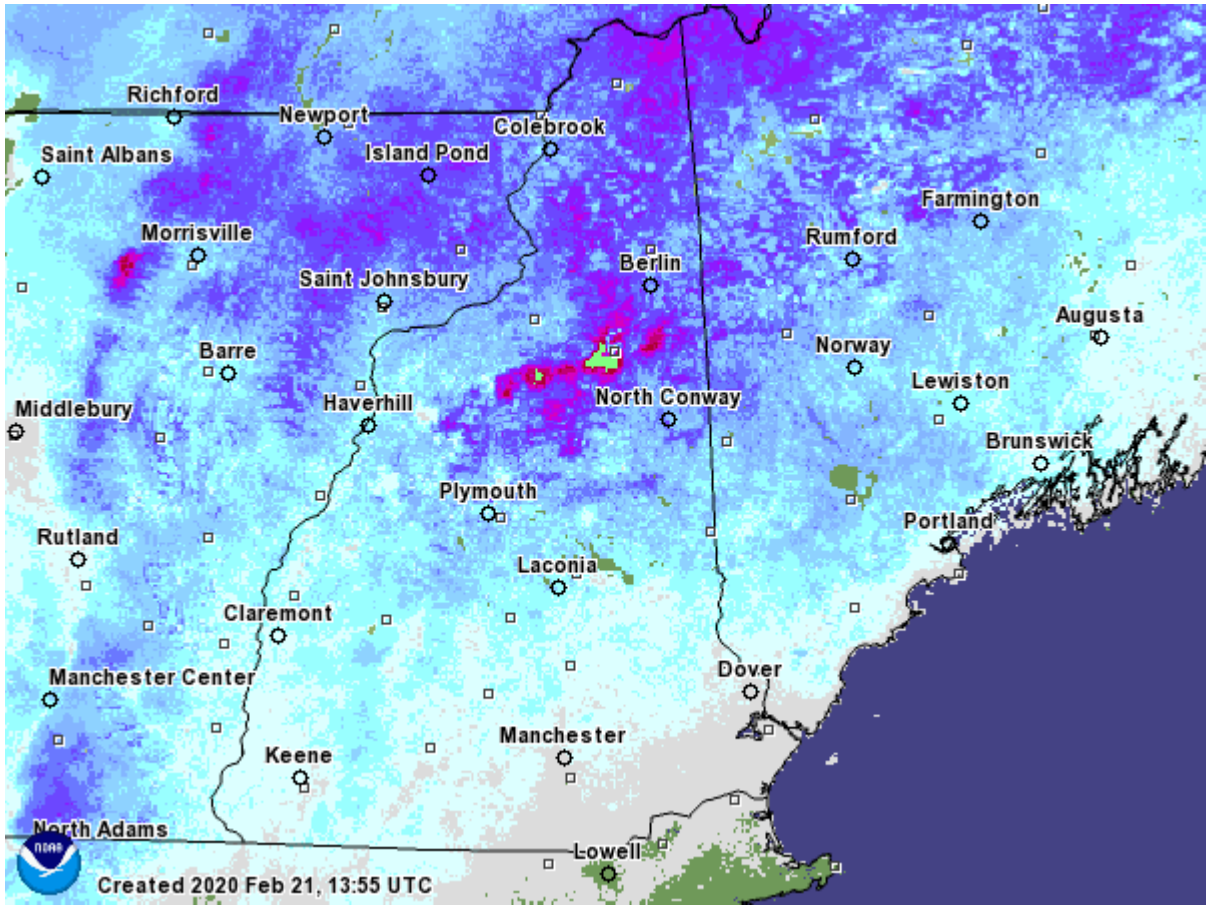


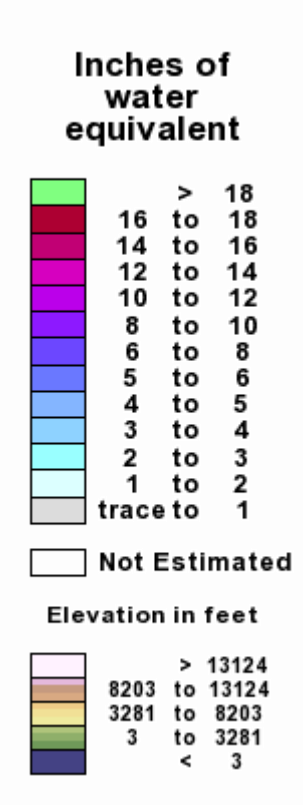
0.62

*POR = Period of record

Spring 2020 Conditions and Flood Hazard Assessment
Snowpack

Snow water equivalent (SWE) is generally below normal from the Saco and Pemigewasset Rivers basins south to the Massachusetts border. The SWE is near to above normal in portions of Coos county.





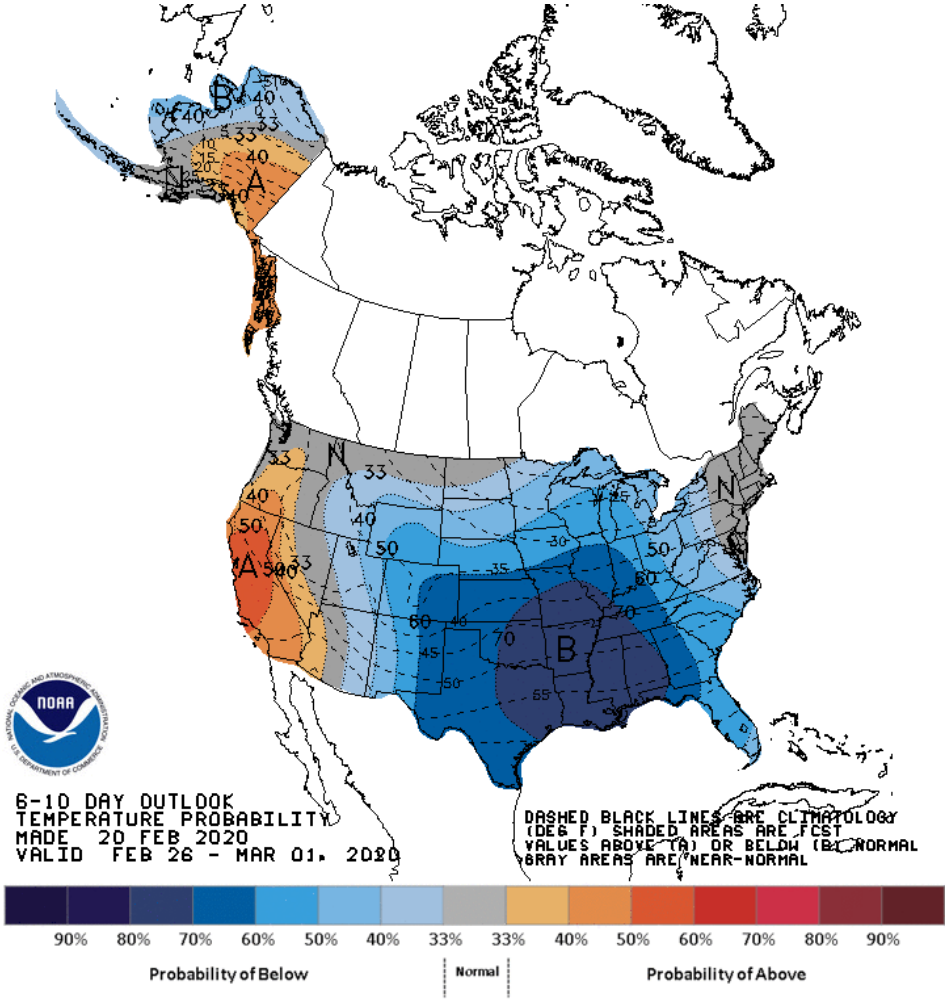
Spring 2020 Conditions and Flood Hazard Assessment
Weather Forecast Summary

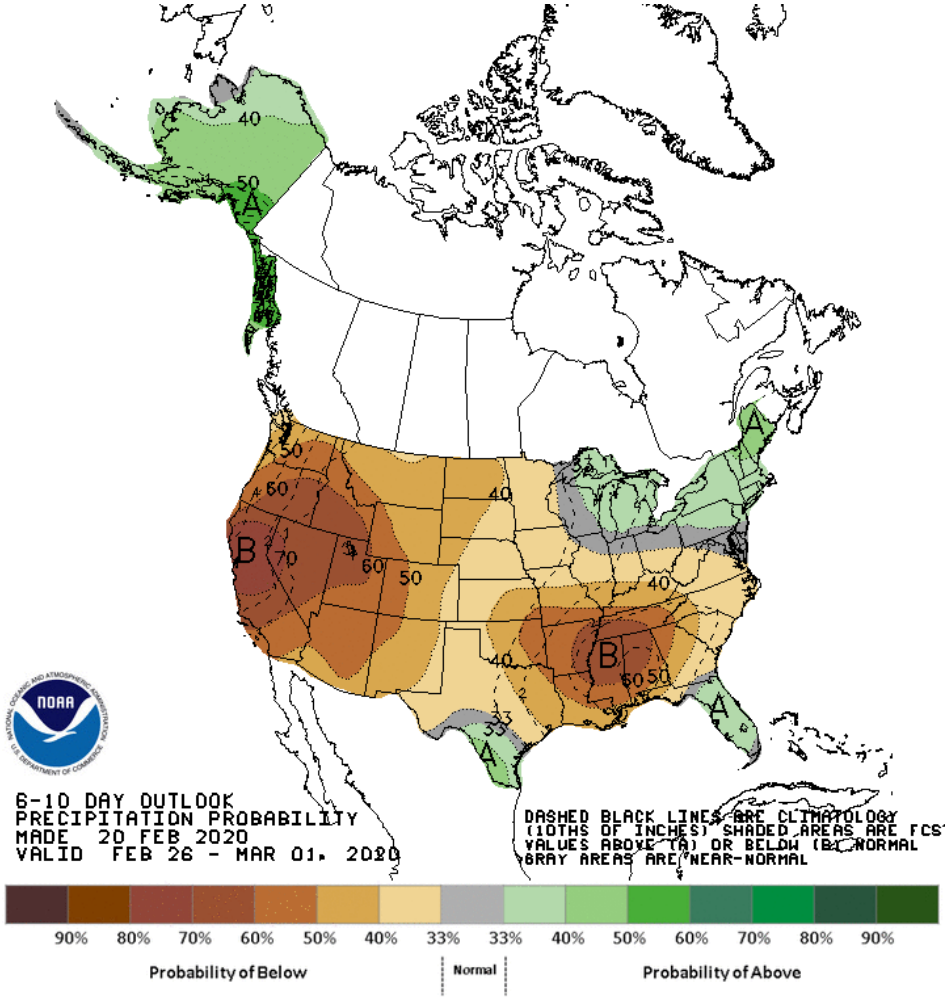
The next chance for precipitation will be Tuesday February 25. Starting as snow early Tuesday morning, with nearly all locations outside of the White Mountains changing over to rain.

The 6 to 10 day forecast valid from February 26 to March 1 indicates near normal temperatures and above normal precipitation.

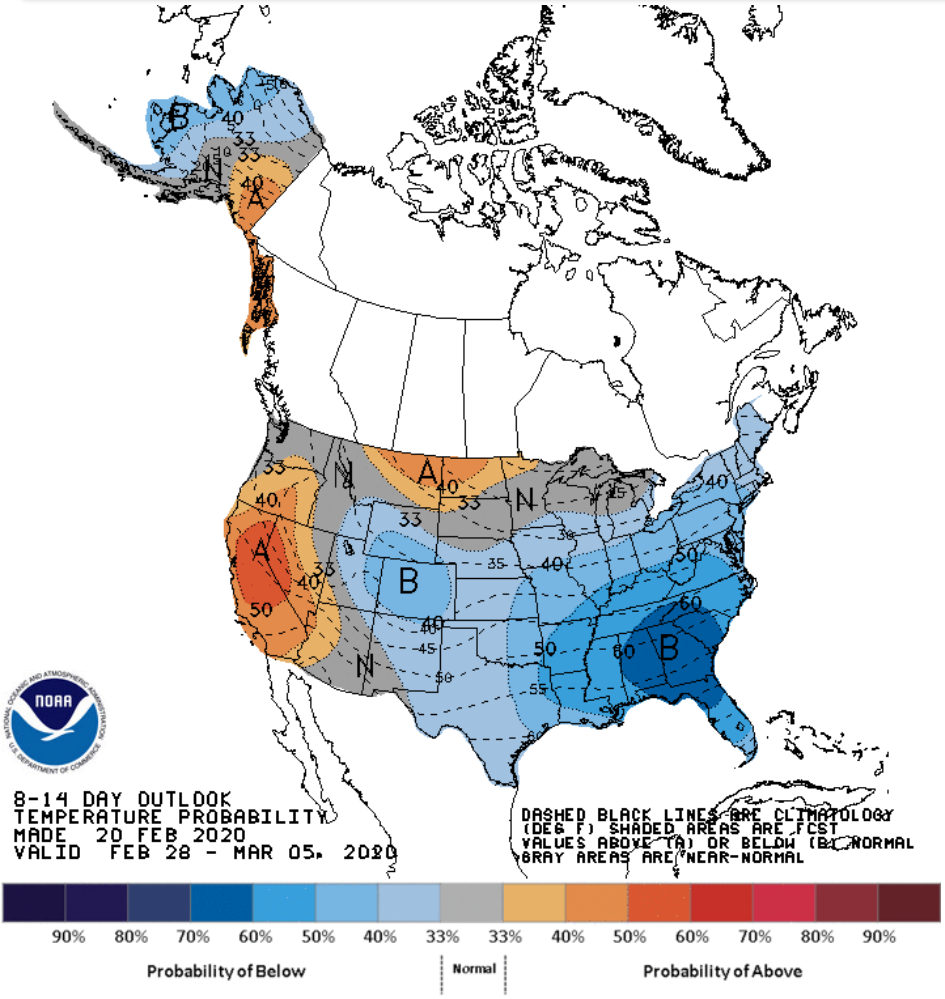
The 8 to 14 day forecast valid from February 28 to March 5 indicates below normal temperatures and below normal precipitation

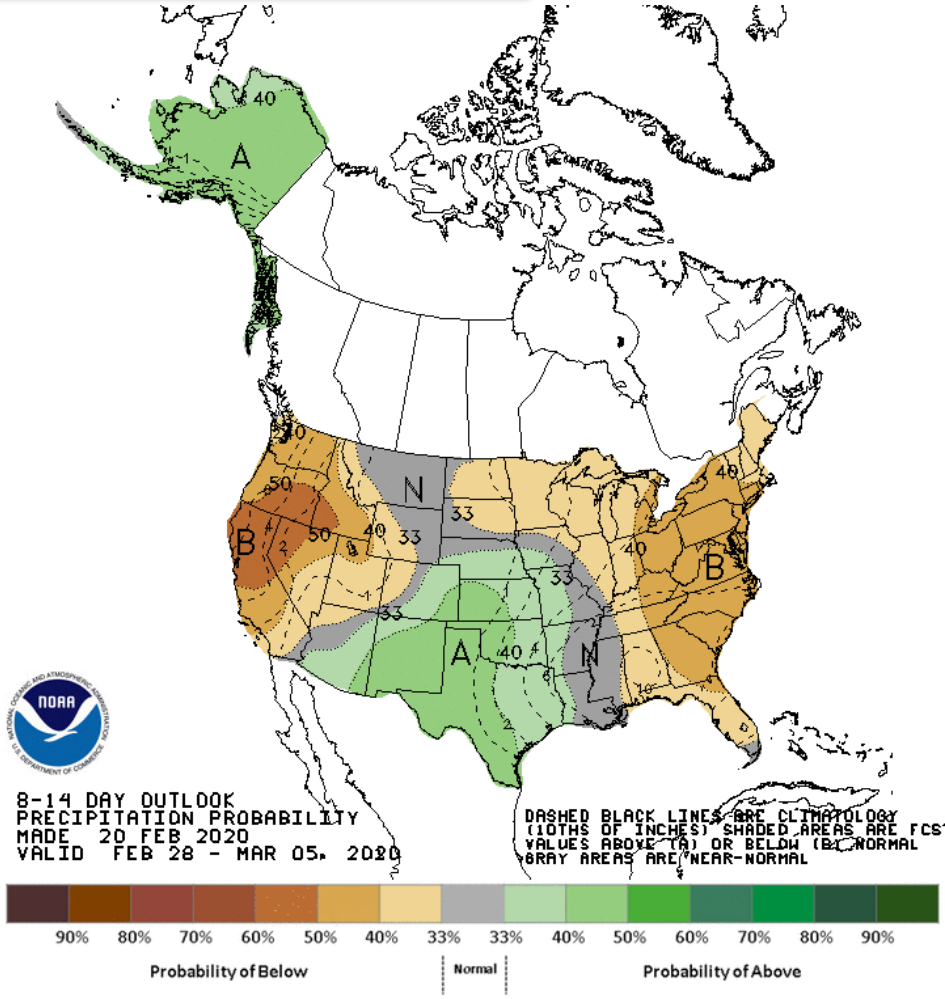
Spring 2020 Conditions and Flood Hazard Assessment
Weather Forecast Summary





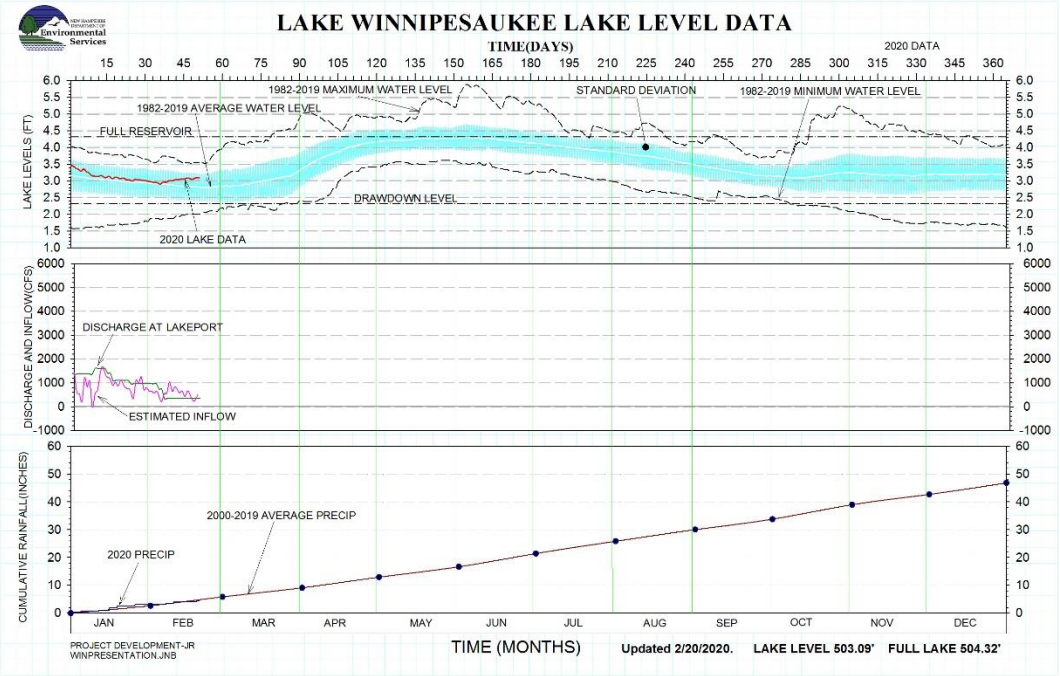
Spring 2020 Conditions and Flood Hazard Assessment
Weather Forecast Summary





Spring 2020 Conditions and Flood Hazard Assessment
Water Levels of Lakes

With the water content in the snowpack being below normal for this time of year for most of the state, the levels of the lakes managed by NHDES are being held at normal or slightly above normal levels in anticipation of potentially lower than normal spring runoff. Water management decisions regarding the timing of spring re-fill of the lakes will be made based on the snow water equivalent of the snowpack in March.



NHDES Lake Level Data can be accessed at:
https://www4.des.state.nh.us/Rti_home/

Spring 2020 Conditions and Flood Hazard Assessment
Ice Jams

USGS survey of recent ice conditions

USGS Hydrographer conducting field measurement of streamflow and ice thickness at Moose River near Victory, VT 1/16/20

Border and frazil ice on Bearcamp River near Tamworth 2/6/20

- Warmer temperatures and rain in mid-January resulted in many rivers clearing of ice.
- Ice thickness in northern NH ranges from 0 to > 1 ft of ice.
- Most rivers still contain border ice.
- Open rivers may increase potential for Freezeup Jams with
  - Subfreezing air temp
  - Frazil and broken border ice
  - May occur during STEADY streamflow conditions

Spring 2020 Conditions and Flood Hazard Assessment
Ice Jams

Ice Jam Outlook

Anchor ice releasing on the Sugar River near Claremont, NH 01/17/20

- Threat of ice jam flooding below normal in southern and central New Hampshire; near normal in northern New Hampshire
- Warmer than normal winter
- Ice runs on rivers earlier in winter leaving much less ice on the rivers than normal

Spring 2020 Conditions and Flood Hazard Assessment
Ice Jams

Keep watch as conditions change during the next month

Slow Melt

- Ice melts in place
- Long, gradual warming period with no significant rain
- Ice cover thins, weakens and melts in place, or forms minor jams

These *rapid breakup* scenarios are what we have to watch for and continue to monitor

Rapid Breakup

- Rapid increase in streamflow from rapid warmup and/or **heavy rain**; fractures ice
- Ice cover connection with streambanks is fractured
- Stream channel ice begins to move, and feedbacks with flow
- Fractures into smaller and smaller pieces
- Leads to breakup ice jams
  - Changes in channel slope
  - Sharp bends
  - Constrictions
  - Barriers (i.e., bridge piers)

Spring 2020 Conditions and Flood Hazard Assessment
Ice Jams

Managing and Addressing Ice Jams

- Know where ice jam potential is in your town/city
- Have a system in place to monitor ice jams and track upstream conditions
- If ice jam removal is to be considered, recommended to consult with ice jam experts first; safety concerns when considering this option

Ice Jam, Gale River at Franconia (February 2016)

For more information about ice jams, see New Hampshire's Ice Jam Observer Training:
https://www.des.nh.gov/organization/commissioner/gsu/fegh/documents/201711-ice-jam-presentation.pdf

Spring 2020 Conditions and Flood Hazard Assessment
Flood Potential

- Normal flood potential exists for 2020 runoff season
- No indication of rapid warming with heavy rain during the next 2 weeks
- Ice runs on rivers earlier in winter; much less ice on the rivers than normal (southern and central New Hampshire)
- Most flooding is the result of heavy and persistent rain. Antecedent conditions like soil saturation and snowpack may contribute to flooding.
  - Groundwater levels are within normal ranges, except for select wells under local conditions
  - Snow water equivalent is generally below normal except Coos County, which is near to above normal

Conclusion

- Potential for flooding can change, based on new factors. Emergency management directors and citizens need to stay abreast of latest forecasts and conditions.

- Agency members of Silver Jackets continually monitor water levels and weather forecasts.

- Continue to monitor reports from NHDES, NH HSEM, USGS and NWS-Gray, Maine throughout the spring.

- Local emergency management officials should also monitor floodprone areas in their areas of responsibility.

Other Resources

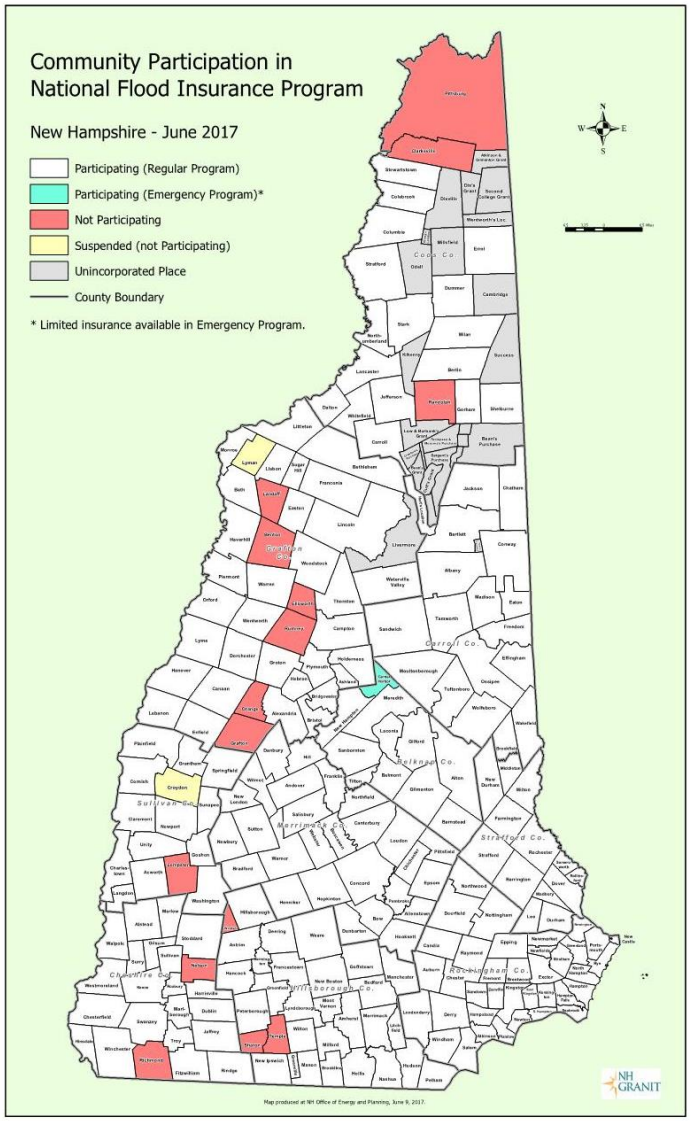
The National Flood Insurance Program in New Hampshire

The National Flood Insurance Program (NFIP) is a partnership between local communities and the Federal government. In New Hampshire, **219 communities** currently choose to participate in the program.

NFIP communities adopt and enforce floodplain regulations that meet minimum NFIP standards to manage development in Special Flood Hazard Areas on FEMA flood maps. This ensures that new development in high risk areas is performed in a way that keeps people and property safer.

In NFIP communities, all residents and business owners can purchase NFIP flood insurance regardless of whether or not they are located in a Special Flood Hazard Area. Currently, there are almost **8,000 NFIP flood insurance policies** in force in the state, totaling over **$1.8 billion in coverage**.

Visit www.nh.gov/osi/planning/programs/fmp to learn more about the NFIP and floodplain management in New Hampshire.



National Flood Insurance Program – New Hampshire
Status of FEMA Flood Map Update Projects

Rockingham County Coastal Study - FEMA is moving forward with finalizing preliminary flood maps issued in 2014 and 2016.

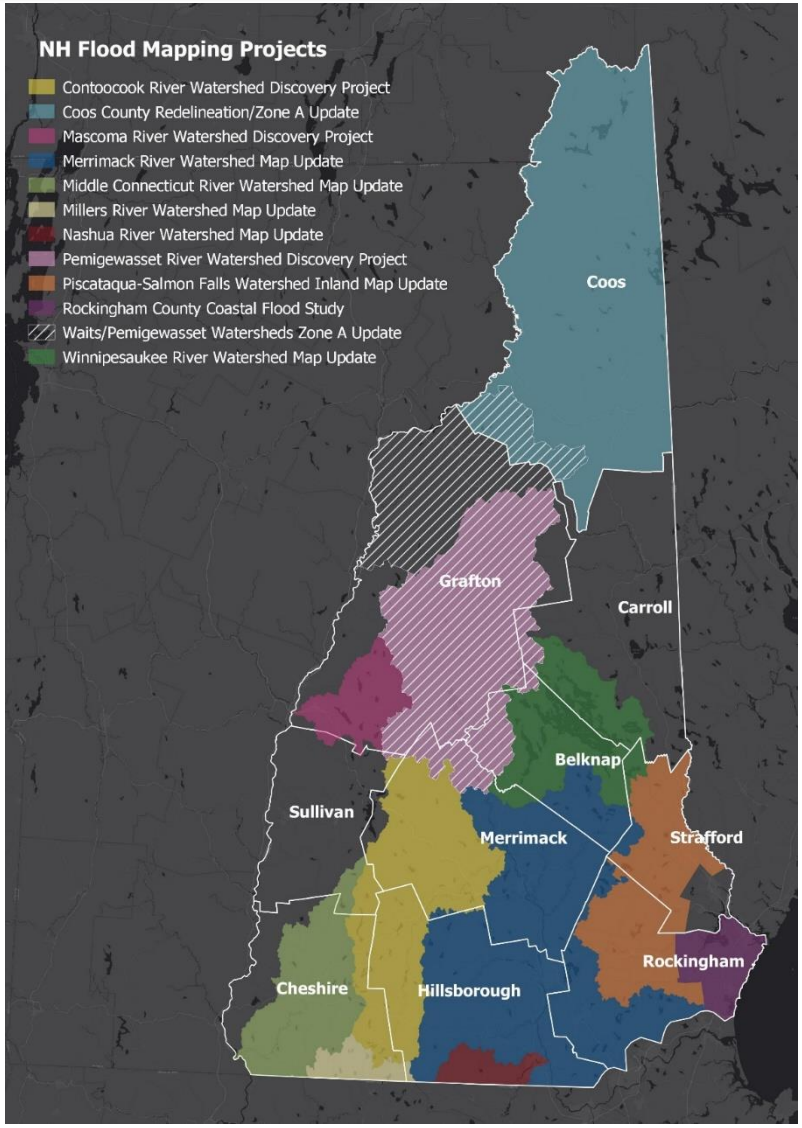
Merrimack/Nashua River Watersheds - Preliminary flood maps are expected to be issued in 2020.

Salmon Falls-Piscataqua River Watersheds (Inland) - Preliminary flood maps may be issued in 2020.

Contoocook, Middle Connecticut, Millers, Pemigewasset, and Winnipesaukee River Watersheds – Updated field surveys and/or flood hazard analyses for new flood maps are currently in progress.

Mascoma River Watershed – A Discovery project to determine a scope of work for a new flood mapping project has been initiated.

Additional projects are underway that affect the **Waits/Pemigewasset River Watersheds** and **Coos County** to update certain flood hazard boundaries. These changes will be reflected on the flood maps when the next map update for those areas occurs.



Get the latest news about FEMA flood map updates at
www.nh.gov/osi/planning/programs/fmp/current-map-projects.htm

Hazard Mitigation Assistance Programs

The Hazard Mitigation Grant Program (HMGP) provides grants to state and local governments to implement long-term hazard mitigation measures following a major presidential disaster declaration. The purpose of HMGP is to reduce the loss of life and property due to disasters and enable mitigation to be completed immediately following a disaster event.

Pre-Disaster Mitigation (PDM) provides funds to State and local governments for hazard mitigation planning and the implementation of mitigation projects prior to a disaster event. The goal of the PDM program is to reduce overall risk to the population and structures from future hazard events, while also reducing reliance on Federal funding in future disasters. PDM grants are funded annually by congressional appropriations and are awarded on a nationally competitive basis.

The Flood Mitigation Assistance (FMA) program is authorized by Section 1366 of the National Flood Insurance Act of 1968, as amended, with the goal of reducing or eliminating claims under the National Flood Insurance Program (NFIP). FMA provides funding to States, Territories, federally-recognized tribes, and local communities for projects and planning that reduces or eliminates long-term risk of flood damage to structures insured under the NFIP. FMA Funding is appropriated by Congress annually and grants are awarded on a nationally competitive basis.

Hazard Mitigation Assistance Programs

Current Funding Opportunity Status:

Hazard Mitigation Grant Program (HMGP)

- Presidential Disaster Declaration DR-4457 August 15, 2019
- 30-day lock-in amount of $324,283.00
- Request for Letters of Intent were sent out September 2019
- Subapplications were received December 6, 2019
- Interagency Hazard Mitigation Team meeting was held December 16, 2019 to prioritize projects
- Prioritized applications will be submitted to FEMA no later than August 15, 2020

Pre-Disaster Mitigation (PDM) and Flood Mitigation Assistance (FMA)

- Notice of Funding Opportunities released August 2019
- Request for Letters of Intent were sent out September 2019
- Subapplications were received December 6, 2019
- Interagency Hazard Mitigation Team meeting was held December 16, 2019 to prioritize projects
- Prioritized applications were submitted to FEMA by January 31, 2020
- Estimated Funding Selection date of June 1, 2020
- Estimated award date of December 30, 2020

Hazard Mitigation Assistance Programs

Building Resilient Infrastructure and Communities (BRIC)

- Per 2018 Disaster Recovery Reform Act: National Public Infrastructure Pre-Disaster Hazard Mitigation authorizes a National Public Infrastructure Pre-Disaster Mitigation fund under Sec. 203, funded from a 6% set-aside of DRF funds for disaster grants
- Provides pre-disaster mitigation funding to states and tribes that have received disaster declaration(s) within 7 years
- This program will allow for larger, more consistent investment in mitigation before a disaster; it will focus on risk, resilient infrastructure, and protecting/restoring lifelines
- Target date for Notice of Funding Opportunity is August 2020; target date for first application period to open is October 2020
- Will replace Pre-Disaster Mitigation Program

For more information on all the Hazard Mitigation Assistance (HMA) Programs please visit the HSEM Resource Center or contact your assigned HSEM Field Representative at 271-2231

Resources and Upcoming Training for Local Officials

The NH Flood Hazards Handbook

Local officials can use the *NH Flood Hazards Handbook* to help prepare for, respond to, recover from, and mitigate floods. It provides guidance, best practices, and information about available federal and state resources in situation-specific sections: Before the Flood, During the Flood, and After the Flood (Short Term Recovery and Long Term Recovery Considerations). The handbook is available for download at *https://silverjackets.nfrmp.us/State-Teams/New-Hampshire*.

April 30th: NH Coastal Adaptation Workgroup (CAW) Spring Workshop (Location TBD)

This workshop for local officials is presented by CAW in partnership with state agencies and will cover selected topics in the *NH Flood Hazards Handbook*. More details, including how to register, will be posted to the CAW website at *www.nhcaw.org* when available.

April 9th: Floodplain Administrator 101 Training Workshop, Litchfield

This workshop is for local officials who administer and enforce floodplain regulations, review permit applications, issue permits for development in floodplain areas, or who are otherwise interested in learning more about a community's responsibilities as a participant in the National Flood Insurance Program. For more information, including how to register, visit *www.nh.gov/osi/planning/programs/fmp*

NH Silver Jackets Team – State and Federal Agencies

State Agencies

- Department of Business and Economic Affairs
- Department of Environmental Services
  - *Coastal Program*
  - *Dam Bureau*
  - *New Hampshire Geological Survey*
  - *Wetlands Bureau*
- Department of Natural and Cultural Resources
- Department of Safety
  - *Homeland Security and Emergency Management*
- Department of Transportation
- Fish and Game Department
- Office of Strategic Initiatives
  - *Floodplain Management Program*

Federal Agencies

- Federal Emergency Management Agency
  - *Region 1*
- National Oceanic and Atmospheric Administration
  - *National Weather Service – Gray, ME*
- U.S. Army Corps of Engineers
  - *New England District*
- U.S. Department of Agriculture
  - *Forest Service – White Mountain National Forest*
  - *Natural Resources Conservation Service - New Hampshire*
- U.S. Geological Survey
  - *New England Water Science Center*